

IN THE CLAIMS:

The status of the claims is as follows:

- 1-4. (Canceled)
5. (Original) A process for heating a thixocast Fe-based alloy material having a chilled structure into a semi-molten state in which solid and liquid phases coexist,

the process comprising setting an average rate H_R of heating to a point A_1 in an Fe-C based equilibrium diagram to be in a range of $0.5^\circ\text{C/sec} \leq H_R \leq 6.0^\circ\text{C/sec}$, and setting a maximum temperature gradient T_G of the inside of the Fe-based alloy material per unit distance to be at $T_G \leq 7^\circ\text{C/mm}$.
6. (Original) A process for heating a thixocast Fe-based alloy material according to claim 5, further setting a sonic velocity S_v of said Fe-based alloy material determined by an ultrasonic velocity measurement to be at $S_v \geq 5,600 \text{ m/sec}$.